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ABSTRACT

The problem of this conference panel was to identify, develop, and compare means by which children's motivation to learn basic reading skills may be strengthened and maintained. In this panel report, four approaches to the problem are offered in the following areas: sociocultural influences which help to determine individual differences in the attitudes, motivations, and skills of young learners; differences in teacher-learner interactions and their implications; differences in instructional approaches and sequences of experiences; and the relationship between learning to read and learning other language communication skills. A list of references is included. (JM)

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"It was unlawful, as well as unsafe, to teach a slave to read.

'It will forever unfit him to be a slave. He will at once become unmanageable and of no value to his master.'

These words sank deep into my heart. From that moment, I understood the pathway from slavery to freedom. Though conscious of the difficulty of learning without a teacher, I set out with high hope and fixed purpose, at whatever cost of trouble, to learn how to read."

Frederick Douglass

NATIONAL INSTITUTE OF EDUCATION

Washington, D.C.

August, 1975

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PANEL 8

LEARNING AND MOTIVATION IN EARLY READING

PROBLEM STATEMENT

Identify, develop, and compare means by which children's motivation to learn basic reading skills may be strengthened and maintained.

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PANEL 8

LEARNING AND MOTIVATION IN EARLY READING

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PREFACE

The National Institute of Education (NIE) came into being during 1972. Its authorizing legislation requires the NIE to:

- Help solve or alleviate the problems of, and achieve the objectives of, American Education.
- Advance the practice of education as an art, science, and profession.
- Strengthen the scientific and technological foundations of education.
- Build an effective education research and development system.

In order to aid in meeting these general objectives, the National Council on Education Research (NIE's policymaking body) approved the creation of five priority programs in December, 1973. One of the priority programs was Essential Skills.* Its purpose was:

> To investigate through research and development, ways to aid all children to obtain skills essential for functioning adequately in school and society.

The initial focus of the Essential Skills Program was in the area of reading. Broad guidelines for an NIE effort in reading had been developed in a small conference held on Cape Cod during the late summer of 1973.** During 1974, the Essential Skills Program carried out an intensive effort designed to formulate more specific plans for funding research and development activities in reading. A variety of meetings were held with groups of teachers, school administrators, and scientists to designate directions for the program. The most ambitious of the meetings was held in Washington, D.C., in August, 1974, and directly involved over 175 individuals -- 50 as Conference participants and 125 as consultants to the Conference. This report is the product of one of the 10 panels of the August Conference.

The impetus for the Conference stemmed from a number of concerns about the state of Federal funding of research and development in education. Four concerns stood out in particular for reading.

1. Research in the field of reading was fragmented and noncumulative.

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*During the past few months, the Essential Skills Program has been renamed the Learning Division of the Basic Skills Group. Both the Basic Skills Group and the Learning Division continue to follow the guidelines set out by the National Council in December, 1973 (above).

**See Miller, George A. (ed.) Linguistic Communication: Perspective for Research, International Reading Association; Newark, Delaware, 1974, 45 pp.

2. The Federal Government was not making constructive use of the state of knowledge in the field in their decisions to fund new research and development.

3. There was a lack of positive and firm coordination between the Federal Government and the professional research and practitioner organizations around the country.

4. A large number of scientists in a variety of disciplines carry out research with relevance to reading. We considered it important to attract these scientists to work in the applied areas of educational research.

The Conference itself was a step in meeting these concerns. During the past year, the NIE has been developing plans for funding research and development in reading for the next two years. Suggestions from the Conference have played an important role in this process. But planning is an ongoing process and we hope by publishing and widely disseminating the reports from the Conference to stimulate discussion of the reports, of research and development in the field of reading, and, indirectly, of the plans of the Institute.

To some extent the format for the Conference was influenced by three other similar efforts of the Federal Government. In the area of health research, the conferences leading to the National Cancer Plan and the National Heart and Lung Institute Plan served as partial models. Within NIE, the Teaching Division had held a major planning effort in the area of teaching research during the early summer of 1974. The intent in each of these efforts was to develop a coherent set of documents that would be responsive to the needs of the American public and to knowledge in the field.

We felt it necessary to structure the Conference in two important ways. First, after extensive consultation with scientists and practitioners in the field we arrived at the conclusion that major efforts in the past had often ignored or down-played the critical importance of the stage of reading called "reading comprehension." Although we realized the impossibility of actually separating out "reading comprehension" from the earlier stage of learning to read -- which requires the learner to be able to translate written letters and words into speech -- our advice suggested that the comprehension or "reading for meaning" stage required far more attention than it had received in the past. Consequently, seven of the ten panels focused on problems in this area. Second, to direct the focus of the panels to planning future research we requested the panelists to organize their ideas into general approaches within the problem area, within the approaches to suggest programs for research, and, finally, when possible to specify particular research or development projects.

The seven panels addressing problems in comprehension spanned a wide range of concerns. The first three panels focused on basic research issues. Their panel reports are titled: Semantics, Concepts, and Culture; The Structure and Use of Language; and Attention and Motivation. The fourth panel was asked to consider the problem of Modeling the Reading Process. The fifth panel directed its attention to the issue of measuring how well people read and its report is titled Assessment of Reading Comprehension. The sixth and seventh reports directed themselves respectively at the practical problems of the Application of Existing Reading Comprehension Research and Reading Comprehension and the High School Graduate. The final three panels directed their attention to three pressing concerns in early reading: Learning and Motivation in Early Reading; Reading Strategies for Different Cultural and Linguistic Groups; and Essential Skills and Skill Hierarchies in Reading.

Although the reports have undergone some revision and editing since the Conference, the major part of the work was done in concentrated sessions in the space of a few days. The resulting documents are not polished or exhaustive. They are meant to be working documents to stimulate debate, suggestions, and comments. Such comments or requests for other reports should be directed to:

Director, Learning Division
National Institute of Education
Washington, D.C. 20208

The work of organizing the Conference was carried out by members of the Essential Skills staff at the NIE -- each of the panels had an NIE staff person as a permanent liaison. Special acknowledgments are due to Susan Duffy and Donald Fisher for their assistance in preparing the reports for publication and to Arthur Young & Company for coordination and arrangements before, during, and after the Conference. Finally, the work of NIE cannot proceed without the kind of skill, involvement, and hard work given by the panel chairpeople, panelists, and consultants for this Conference. The ideas and emphases in the reports are the products of their cumulative expertise.

Marshall S. Smith
Conference Chairperson

LIST OF PANEL REPORTS AND CHAIRPERSONS

1. Semantics, Concepts, and Culture, Dr. George Miller, Rockefeller University

2. The Structure and Use of Language, Dr. Thomas Trabasso, Princeton University

3. Attention and Motivation, Dr. Sheldon White, Harvard University

4. Modeling the Reading Process, Dr. Richard Venezky, Wisconsin University

5. Assessment of Reading Comprehension, Dr. Ernst Rothkopf, Bell Laboratories

6. Application of Existing Reading Comprehension Research, Dr. Lauren Resnick, University of Pittsburgh

7. Reading Comprehension and the High School Graduate, Dr. Mina Shaugnessy, City University of New York

8. Learning and Motivation in Early Reading, Dr. Richard Hodges, University of Chicago

9. Reading Strategies for Different Cultural and Linguistic Groups, Dr. Manuel Ramirez, University of California, Santa Cruz

10. Essential Skills and Skill Hierarchies in Reading, Dr. Irene Athey, University of Rochester

PANEL 8

LEARNING AND MOTIVATION IN EARLY READING

INTRODUCTION

In our efforts to improve reading comprehension in the later grades, we cannot ignore instruction in early reading skills. The focus on comprehension, reading to gain meaning from a written message, need not be consigned to the later years. It can and should be an effective part of the early reading curriculum, giving a richer context to the traditional skills required of beginning readers. This early meaningful interaction with written material can guide the conceptual growth that will be the base for later, more advanced comprehension abilities. It can also motivate children by giving them a feel for the range of meaningful materials accessible to them once they learn to read. In a broader sense, the experience of learning to read and interacting with teachers and other children in the classroom set the stage for the whole complex course of motivational and cognitive changes throughout schooling.

In a similar vein, children's earlier experiences, at home and in preschool learning contexts, help set the stage for the course of their classroom learning and help provide them with interpersonal skills and knowledge to bring to the task of learning to read. "Readiness" is much more than just the possession of some discriminative responses to pictures and letters. It must be regarded as a whole range of factors including the fit between children's prior experiences in society, their subculture, and their family, and the structure of the instructional context in which they find themselves.

Problem Area Description

The problem area of Panel 8 was to identify, develop, and compare means by which children's motivation to learn to read might be strengthened and maintained. For substantial numbers of children entering schools, learning to read is neither an easy nor rewarding experience. Indeed, for some children, the goal of acquiring basic reading skills may conflict with other goals.

This is not a new problem, of course. Investigations of children learning to read and the design of strategies for reading instruction have been among the most active areas of educational research and development. From these efforts a substantial body of research literature about early reading, as well as a plethora of programs and instructional strategies aimed at teaching young children to read effectively has developed.

In the panel's view, however, there are significant dimensions of the problem which have been generally overlooked or inadequately investigated encompassing much more than learning to read. The panel maintains that it is essential to study these dimensions if we are to gain a fuller understanding of significant factors that can interfere with children's acquisition of basic reading skills.

The panel identified four such dimensions. The first concerns sociocultural influences which help to determine individual differences in attitudes, motivations, and skills of young learners. The second focuses on differences in teacher-learner interactions and their implications. The third concerns differences in instructional approaches and sequences of experiences; the fourth focuses on the relationship between learning to read and learning other language communication skills.

All children come to school with cognitive, social, linguistic, and other characteristics which, in conjunction with their individual developmental characteristics, reflect their experiences as a member of a family, social structure, and culture. These factors and others serve to shape children's expectations about school. The first program recommends investigation of these factors and their effects on children's attitudes and motivations to achieve in school.

Similarly, teachers bring their own background experiences to the teaching-learning situation which shape their perceptions of children's learning potential. We need to know more about how teachers perceive and deal with children's developmental and sociocultural characteristics and how these perceptions affect the children's views of themselves and their motivation to achieve in school. The interaction between teachers and learners, each with expectations of the other, and the instructional outcomes of this interaction, are areas chosen for study in the second program.

At the same time, the instructional setting--materials, methods, grouping practices, modes of assessment, to name some of the more critical elements--has an effect on interactions within the classroom and on student achievement. This dimension of learning to read can be studied more productively than it has been. To state the obvious, reading instruction occurs in real-life situations, not in laboratories. The third program recommends the development of procedures to observe and describe what happens in the natural setting where reading instruction takes place, coupled with the formulation of experimental designs for studies of learning to read in these settings.

Last, learning to read is not an isolated linguistic experience, but draws upon individuals' language abilities, as do their other communication skills. We recommend in the fourth program an examination of the interrelationships between listening ability and reading ability, the relationship between early reading and early writing, the effect of children's growing syntactic knowledge on reading ability, and the use of television to expand children's language abilities.

In examining the following approaches it becomes evident that the panel recommends studies which, in many instances, transcend beginning reading instruction per se. We believe that many of the problems affecting the achievement motivations of children learning to read

apply to school-learning in general. It is an attempt to get at the more basic issues which can interfere with learning to read that the following studies are recommended.

The panel also feels it important to emphasize that children's motivational development and interactions with teachers take place within a classroom setting. Hence, research recommended here focuses on the classroom context. More basic considerations of these issues, focusing on the psychological, biological, and neurological bases of motivation and attention, can be found in Panel 3 of this series.

APPROACH 8.1

INDIVIDUAL IDFFERENCES IN ACHIEVEMENT MOTIVATION

Approach Statement

This approach tries to determine the sociocultural influences contributing to individual differences in attitudes toward school and the motivation to achieve in school.

Approach Potential

As differences in the socialization experiences of different child populations are more clearly understood, it becomes apparent that we need to modify current psychological theories of achievement motivation. These modifications then need to be examined for their relevance to developing alternative motivation and reinforcement strategies in the general educational process and, in particular, for the acquisition of reading skills in different child populations.

Approach Rationale

American children generally live within the boundaries of two sociocultural systems, home and school. For children of the educated middle classes, these sociocultural systems are essentially compatible. For the most part, communication and human relational styles, as well as cognitive and motivational styles, are similar in each setting. There is, therefore, little difficulty in devising strategies to reinforce and motivate these children

For many other children, however, the sociocultural systems of home and school are not compatible. The same teachers who have developed reinforcement and motivational strategies that work with middle-class children often experience frustration when they find that the same strategies do not work with these children. Such children are commonly described as lacking motivation to achieve. What needs to be recognized, however, is that the classroom environment itself may not reflect the reinforcement and motivational characteristics with which these children are familiar in their home settings.

We need to identify the reinforcement and motivational characteristics unique to the different sociocultural systems existing in the United States. Once these characteristics have been defined, some basic issues arise. For example, a major policy issue that emerges is the following: If the socialization experiences of the home are different from those emphasized in the school, should the school (1) ignore the home experiences and concentrate on developing children's receptivity

and responsiveness to the reinforcement and motivation strategies emphasized in the school; (2) incorporate the strategies characteristic of children's home socialization patterns; or (3) construct its environment so that it conveys the existence of differing motivational and reinforcement characteristics and provides exposure to all forms for all children?

Clearly, these are important policy decisions facing public education today, particularly as political pressure increases for schools to adopt practices supportive of cultural pluralism. The shape, form, and nature of these policies, especially as they apply to the area of motivation, require research delineating the issues of educational practice involved.

At the present time, development of educational practices related to motivation is complicated by the fact that current achievement motivation theory assumes a model of motivation stressing benefits to individuals in the form of grades, promotion, praise from the teacher, and so on. It stresses competitive behavior oriented toward personal gain as one of the major instrumental routes to achievement (Dreeben, 1970; McClelland et al., 1953; Parsons, 1968). However, recent research implies that the incentives underlying achievement motivation may differ depending on the nature of the socialization experiences of the individual. For example, it now appears evident that for a number of sociocultural systems (those representative of certain groups of Black Americans, Mexican Americans, Puerto Rican Americans, Japanese Americans, Chinese Americans, and others) the goal of socialization is to develop in children a strong sense of loyalty and responsibility to the family. The individuals' personal identity within this type of socialization framework is intricately linked with the family. Identity appears to be developed early in life and subsequently generalized as an achievement motive stressing benefit for others (Ramirez and Castañeda, in press; Kagan and Madsen, 1971; Ramirez and Price-Williams, 1974).

Under these socialization dynamics, children come to assume that they should achieve in order to better the family in some fashion. Furthermore, achievement for the family appears to become generalized as achievement gained through cooperation. To strive for individual gain is considered selfish. Indeed, competitive behavior stressing personal advantage is seen as destructive to the family.

In light of this recent research, we need to develop a fuller understanding of the different reinforcement and motivational requirements different child populations bring to school and to incorporate this information into training programs for educational personnel. These considerations, thus, divide this approach into the following programs.

Program 8.1.1: Incentive Differences in Achievement Motivation in Different Child Populations.

Program Statement

The aim of this program is to develop achievement motive models incorporating an assessment of an individual's relative preference among several incentives; e.g., achievement for self-betterment as opposed to achievement for the benefit of others. These models should provide an opportunity to assess the presence of more than one incentive preference in individual children. Such an assessment would help determine (1) whether or not in a child's repertory of achievement incentives there is one compatible with that of the school environment and (2) the extent to which one or more incentive preferences is prominent in strength--that is, generalizable from one situation to another.

Program Potential

Recent work on the achievement motive of ethnic groups other than the Anglo-American has produced new procedures and methods for general study in this area. A clearer picture is evolving of some of the critical environmental and socialization sources that either facilitate the development of one incentive over the other or produce conflict. With this information, we can identify and assess the achievement motive in classroom settings.

Program Research Considerations

The kinds of behaviors associated with different incentive preferences in children should be described so that they can be easily recognized and understood by teachers. These descriptions should focus on differences among children of different cultural groups and of different age levels. Furthermore they should describe the development of incentive differences in the early socialization experiences of children. Description of these experiences should avoid the value judgments that are often implied in discussions of socialization techniques of other cultures. The field of child development needs to be particularly sensitive to these matters, especially as the field moves into the position of seeking to provide a more thorough understanding of different child populations.

Program 8.1.2: The Role of Sociocultural Factors in the Development of the Achievement Motive.

Program Statement

The aim of this program is to conduct psychological studies of socialization practices of different cultural groups in the United States as these practices relate to achievement motivation.

Program Potential

Concerted effort in this area can lead to a rapid standardization of research procedures and the accumulation of relevant information.

Program Research Considerations

This research can be combined profitably with available sociological analyses of environmental conditions that produce bicultural or multicultural forms of adaptation on the part of different child and adult populations.

Program 8.1.3: Sociocultural Influences on Motivation to Learn to Read.

Program Statement

The aim of this program is to investigate those sociocultural factors which motivate children to learn to read or not to learn to read.

Program Potential

Intuitively, it seems that children who want to learn to read will have an easier time learning than children who do not. Yet, why should children want to learn to read? The middle class home full of books and parents who read frequently may not be an experience shared by all children. Children who miss this early view of reading as a useful activity may lack the desire to learn it when they arrive at school. Still other children may arrive with a desire to learn to read, but that desire is changed through a variety of experiences. Teachers insensitive to the sociocultural influences on children's motivations may unwittingly turn children off. The pressure of peer culture may channel children's interests into other areas. Larger cultural factors may come into play. We must understand the various influences affecting school-age children, and where learning to read fits into their larger scheme of things.

Program Research Considerations

Because reading is stressed so in the early grades (by teachers and often by parents), children may have formulated some ideas about reading that we can explore. There is some suggestion that children from various cultural backgrounds will differ in the kinds of reasons they give for learning or not learning to read. Some will see reading as a means to some other end; others will see it as an end in itself. Some will offer individualistic reasons (so I can get a job); others will be collectivistic (so I can read to my family). These differences need to be documented in a form useful to classroom teachers.

We feel that almost all children can learn to read if motivated. It is up to the teachers in the early years to make sure that the motivation to learn to read is developed and maintained in all children. It is important, then, to discover what might serve to motivate children effectively. Why would children want to learn to read in the first place, and in light of their reasons, what would they want to read? What might persuade unmotivated children that they want to learn to read?

We know from impressionistic reports (e.g., Kohl, 1973) that meaningful reading material is a good motivator for children. The teacher's task becomes one of finding meaningful materials and of finding ways to expand each child's view of what is meaningful and interesting to read. Presumably it will be useful to be able to define meaningful materials in the context of a child's basic motivation for learning to read.

APPROACH 8.2

EFFECTS OF DIFFERENCES IN INSTRUCTOR-LEARNER RELATIONSHIPS ON LEARNING TO READ

Approach Statement

The aim of this approach is to describe how interactions in classrooms between pupils and teachers affect the process of teaching and learning to read.

Approach Potential

The study of teacher-pupil interactions may make four general contributions. First, there is potential for the design of radically new and more productive methods of reading instruction, once we better understand the nature of instructor-learner situations. Second, there is potential for the preservation and enhancement of diverse cognitive and social styles, within as well as across individuals, as a positive benefit to the reading process rather than as a hindrance to its acquisition. Third, there is potential for training the reading instructor, tutor, or classroom teacher to recognize better the responses signaling different types of difficulty and different types of motivation in children from a wide variety of backgrounds. Fourth, there is potential for designing preschool experiences, and even for facilitating earlier parent-child interaction around learning tasks, in order to give all children the benefits of a rich history of participation in teaching-learning situations before they start school.

Approach Rationale

In supporting investigations of the experiences, values, skills, and styles young children and their teachers bring to their interaction, it is useful to focus upon theories which regard teacher-learner interaction as an open and adapting social system.

The notion of an open system entails a purposive approach to behavior and minimizes the differences between action and learning. Open systems are goal-seeking systems which use feedback to reduce discrepancies between actual and intended states. In so doing, the open system not only reaches its goal more efficiently than could be achieved by trial and error, but also accommodates itself (in a sense, rewrites its own programs) so that it is better adapted for subsequent pursuits (von Bertalanffy, 1968; Miller, Galanter, and Pribram, 1960). That organisms are open systems, while inanimate objects are closed systems, is common knowledge. It is also common knowledge that

human organisms are the most open of open systems; they are the least restricted by innate endowment and the most dependent upon learning for their development. What is less commonly understood, and only recently indicated by research in the social sciences, is that a social group of two or more members can also be regarded as an open system, following much the same course of development as that of a single organism. This idea is found in the recent literature of sociology (Goffman, 1967), social psychology, and human development (Lewis and Rosenblum, 1974). A mother and infant together, for example, change their behavioral sequence of signaling and feedback over a period of time in order to achieve mutual goals which will differ from the individual goals with which each partner began, and the new patterns of behavior which result for the dyad will persist until they are further adapted in the course of development. The major implication of recent work in parent-child interaction (Lewis and Rosenblum, 1974) is that, from infancy onward, children shape the course of their own learning. They affect its course by developing, through interaction with "significant others," signal systems which are to some extent unique to each dyad of which they are a member. These signal systems enable an infant to elicit from a parent, or from any partner, specific kinds of information at specific times. An infant, for example, tries to open a box and then signals readiness for a demonstration. It may take the mother, or other "significant other" such as a sibling, only a few minutes or as long as several months to learn to interpret signals from this partner as opposed to others. Of interest here is transfer from such experiences to subsequent interaction with reading teachers.

Obviously, there are only certain occasions in which a mother-child dyad functions as a teacher-learner dyad. A teacher-learner dyad is only one type of human interaction system. Its special property is that some set of skills initially possessed by one partner is to be transmitted to the other. In the long run, both partners are developing, not just the learner, and information is communicated both ways. However, our ultimate major concern is the information flowing from teacher to learner. The open-system approach argues that this flow is only possible because of the two-way exchange of information; this communication is about the learning process itself.

A crucial part of this picture is the background experience of the two partners. Teacher and learner do not begin as tabulae rasae, naive with respect to each other's signals, responses, and expectancies. Their initial interaction is a matter of transfer from earlier experiences with other adults and children, particularly from other teacher-learner dyads of which they have been members. If children have learned from their mothers, for example, then the communication skills built up in that dyad transfer to their interactions with the teacher. But they can transfer to a greater or lesser extent, depending upon the extent to which the teacher behaves as the mother (or fathers, siblings, or other teachers) behaved in interaction with the child. It will also depend upon the extent to which the child

behaves as previous pupils and other partners have behaved in interaction with these teachers, since the time of their own childhoods. In a real sense, these variables determine the "readiness" of teacher and learner to interact.

The rationale presented here clearly suggests a need for better understanding of the development of prior skills in both partners, and of the process of transfer to the classroom. How does that transfer come about? How can it be facilitated, for both child and teacher? How can the early experiences be provided so that children see themselves as active partners in a learning-teaching dyad? Can children actualize this self-concept in such a way as to structure the course of their own interaction with subsequent teachers?

Approach Division

This approach has been divided into two programs. The first focuses on the complexities of teacher-learner interactions as discussed in the approach rationale. Interactions typical of nontraditional learning situations, such as peer and cross-age tutoring, are considered in Program 8.2.2. Such child-child interactions may differ in important ways from adult-child interactions.

Program 8.2.1: Teacher-Learner Interaction Systems.

Program Statement

The aim of this program is to formulate information-processing models of teacher-learner dyads as open systems, with particular emphasis upon longitudinal effects of the child's and the reading teacher's experience in various teaching-learning situations prior to their interaction in the reading class.

Program Potential

Theories of teacher-learner interaction which attempt to understand the dyad as an open, adaptive system are relevant to any efforts to devise fresh and productive approaches to the problem of reading instruction.

Program Research Considerations

The following considerations are offered for investigators attempting to combine an open-systems approach with the naturalistic study of teaching and learning processes.

First, we should not take the word "naturalistic" literally. Certainly it is sometimes useful to observe normal processes in all their complexity, with a minimum of intervention. But once

investigators have a good picture of the phenomena of the classroom, the home, or the playground, there is good reason for them to structure considerably both the instructional context and the learning task. The complexity of the natural setting often obscures the processes of greatest concern to us, and some of that complexity can be eliminated (by confining the subjects to their chairs, for example) without reducing in any the processes one wishes to observe. Furthermore, structuring the task is absolutely necessary in order to compare one observation session with another, and one dyad with another. Comparisons and generalizations can always be made, but the level of specificity at which this can be done depends upon controlling all confounding factors above that level.

Second, we need to make a distinction between situations in which one is sure both partners share the same goal or goals, and situations in which the goal itself is transmitted from teacher to learner. An example of the first situation is when a mother helps her child open a box from which the child is trying to extricate a toy. In the second situation, the mother is trying to get the child to open the box instead of doing something else. Both of these situations are relevant to the problems of the reading teacher. The fact that they are difficult to separate in the real classroom should not be given too much weight: It is a better research strategy to separate the two problems at the outset.

Third, all the projects described here should code and record behavior in real time. Whatever event categories are selected for coding, one needs to know (within fractions of a second, if possible) when the events begin and when they end. When we refer to behavioral interaction, we mean processes that take place in real time. The size of the units for which one can specify cause and effect, signal and response, goal and feedback, and so on, is directly limited by the time scale within which we can accurately and independently observe the two participants. While time-sampling techniques may be useful for the kinds of hypothesis testing to be described in Approach 8.3, we do not feel that time-sampling is an appropriate strategy here. We view the dyadic interaction as a fabric of complex exchanges of information and feedback. In building a model of the exchange, we must have the whole fabric before us in order to draw out of it the subtle patterns from which we can form hypotheses. The succession of events in real time is crucial to this process.

Fourth, teacher and learner must be observed independently by independent observers. Otherwise, no patterns can be discovered in the data; only patterns obvious to the observer will be coded. It is desirable for each observer to be blind to the subject observed by the other--though of course this is often impossible, as when a child sits in mother's lap. The use of videotape with split-screen images, or two synchronized motion picture cameras, is helpful. So is slow-motion photography. But the more steps intervening between the live subject and the live coder of their behavior, the less efficient the research.

Fifth, one does not necessarily code interactive events during the observation itself. In fact, it is often better not to do so. An interactive event, such as "teacher nodding followed by child smiling," is a combination of single events which ought to be observed independently. Ideally, one observer codes the child's behavior, and an independent observer codes the teacher's. Thus, any contingencies found between the two will be consistent patterns of interaction rather than the inevitable interdependence of responses made by any single observer. One can use a computer program or a well-defined set of rules, after the initial transcript of a session has been made, to build up series of two, three, or four events that occur together often enough to be of interest. These recurring patterns can then be treated as single events, and recurring relationships with other events can be sought. We feel these methods are promising; they are in use with variations in the laboratories of Brazelton and Tronick at Harvard, Richards and Bernal at Cambridge, Schaffer and his colleagues at Glasgow, Kaye and Fogel at Chicago, and several other investigators (Lewis and Rosenblum, 1974).

One obvious problem that arises in research of this type is distinguishing meaningful patterns of interaction from trivial ones. Because B tends to follow A does not mean that sequence AB is important. But, if ABC consistently leads to D, while ABX leads to Y (supposing that D is attempting to pronounce a new word while Y is jumping out the window), then the conditions under which B leads to C versus X do become important. In other words, investigators should give careful attention to the interrelationships between the definitions of their event categories, the definitions of sequences as ordered combinations of events, reliability and validity of their initial observations and their recoded patterns, and the predictiveness of sequences leading to other sequences.

Project 8.2.1.1: General Teacher-Learner Interaction

The goal of this project is to conduct studies of a wide variety of teacher-young learner interactions in which the skills to be taught are not necessarily reading skills. The interactions to be investigated are examples of teacher-learner dyads generally, of which reading instruction is an example. In addition, they are the kinds of experiences both children and teachers have when they come to the reading task.

By way of example, it may be helpful to formulate a research design for this project. The most important issue is how one chooses the event categories, because these are the units out of which higher level patterns are built and the units which determine the lowest level at which one can subsequently analyze the data.

Suppose the study of instructional interaction were to suggest (as it surely will), that there are types of dyads which tend to adopt certain effective communication styles meeting certain interpersonal needs, but not effective for learning, and that still other interactions deteriorate into noncommunication. It would then follow that, in longitudinal studies such as those called for in Project 8.2.1.4, some children would have a history of more of one of these types of interaction than others. Children's self-concepts as learners (along with many other relevant internal variables, to be assessed by interviews, ratings, and the like) can also be assessed longitudinally. Changes in self-concept would be analyzed both as precursors and sequels of interaction experiences. Where the variables are linear and continuous, path analysis should be used. Where they are more qualitative, nonparametric statistics should be chosen on the basis of the design.

The learning task chosen for a study of this type should be meaningful to the subjects. It must be a task learners cannot do on their own within a reasonable period of time, but which children of a particular age can usually be taught within the space of a few minutes. In other words, we do not expect a study of the acquisition of reading but one of the child learning to read "ch" words, for example.

Once a task has been selected and found appropriate to learners at a particular stage, film or videotape could be used to capture the interaction of at least one pair of subjects engaged in the task. Although it may prove necessary to use live observation in collecting subsequent data, the selection of coding categories requires playing the tape or film many times.

The major constraints on event categories are the number that can be simultaneously observed from a single vantage point, the number of observers available, and the frequency with which different events begin and end.

For example, consider a study of 4 year-olds where mothers would be asked to teach their children to write the letter E. The mothers would be free to do or say anything at all that they thought might be effective, but both the mothers and the children would clearly understand at the outset that the goal was for the children to produce a recognizable E, on a clean sheet of paper, from memory, by the end of the session. The researcher might further constrain the subjects in a number of ways, for example, by only giving each dyad one pencil or by insisting that each member of a dyad has a pencil. This sort of constraint in no way reduces the generality of the findings (though it would be reduced, for example, by the fact that the subjects are drawn only from a certain segment of the population), and it vastly increases the salience of the processes under investigation.

If the task proved to be too difficult for 4 year-old children, a simpler letter or older children would be selected. The videotape

which resulted from the session, together with other observational records from the session, would then have to be coded and transcribed into a running record.

The record is then inspected until one can see consistent patterns. If these and other contingencies hold up over the whole session, it will be time to observe other subjects, longitudinal sessions, and cross-cultural samples.

Project 8.2.1.2: Interaction in Reading Instruction.

The goal of this project is to conduct studies comparable to those in Project 8.2.1.1, but focusing specifically upon the interaction between a first or second grade child and a reading teacher or tutor. This project will illustrate the special features of reading instruction which may limit the generalizability of studies in 8.2.1.1.

Project 8.2.1.3: Longitudinal Studies of Interaction Dyads.

The aim of this project is to investigate the development of particular dyads over a period of time, particularly in the late preschool years. The actual phenomena with which we are concerned are longitudinal, the adaptation of an interaction system between teacher and learner around the task of reading over a period of weeks, months, and sometimes years. After studies of single interactional sessions, the next step is to make longitudinal studies.

The event categories chosen for these studies, and the sequences built up from those events, will inevitably be derived from the events and sequences found to be of greatest regularity and greatest predictability for learning in the two projects listed above. In fact, the longitudinal studies should simply be thought of as the building up of larger and larger patterns, over a time period of sessions instead of seconds.

Special attention should be given to which aspects of communication styles persist most stably over time, which aspects are most quickly abandoned, and why. Some observational categories likely to be fruitful for investigations under this project include the following:

1. Everything said by each partner.

2. Gaze shifts by each partner.

3. "Self-adapting" gestures such as fidgeting, adjusting clothes, brushing hair.

4. Level of arousal as rated by observer--ranging from "edge of seat" to "somnolescent."

5. Hand movements on the page.

6. Hand gestures in conversation.

7. Touching partner.

Obviously, the major part of the analysis has to focus on the content of what is said, the accuracy of the reading (including the accuracy of the teacher as well as the student), and the syntactic as well as semantic characteristics of their additional comments to one another.

Project 8.2.1.4: Longitudinal Studies of Learners.

The goal of this project is to conduct longitudinal studies of children moving from interaction with one adult or child teacher to another. These studies concern the problem of transfer for the child from background experiences to interaction with the reading teacher. Special attention should be given to which aspects of communication style transfer most rigidly to subsequent partnerships, and which aspects are more quickly abandoned.

Project 8.2.1.5: Longitudinal Studies of Teachers.

The goal of this project is to conduct longitudinal studies of adults and children in the role of teachers, particularly reading teachers, as they move from interaction with one child learner to another. These studies concern the problem of transfer for the teacher, from background experience to interaction in the classroom.

Project 8.2.1.6: Self-Concept as Learners.

The aim of this project is to investigate the ways children's skills as partners in a teaching-learning dyad are affected by those aspects of self-concept concerning their roles as active determiners of their own learning. The rationale for Approach 8.2 pointed to the need of interpreting children's behavior in teaching-learning dyads in the light of their feelings and conceptions about themselves as learners. One way early experiences transfer to the reading acquisition task is through their effect upon children's conceptions of themselves as active participants in the learning process, which in turn affects their behavior with the reading teacher. It is time that we abandon the tendency to think only of the "good learner" as a passive receiver of the teacher's knowledge. Instead, it may well be that the effective learner is the one who is active, assertive, even demanding. Besides

having the skills with which to exchange information with the teacher, it appears to be necessary that children have confidence in their rights and duties to use those skills.

While this project delves into the affective domain, the problem can be studied in a manner similar to that of preceding projects. It is a matter of building up from behavioral units to patterns at higher and higher levels. We have tried to make clear here, as in other programs, that there are always tradeoffs between behavioral specificity and such issues as generality and cost-efficiency in research. Analysis is necessary at all levels of specificity from minute eye movements to characterizations of the whole person.

Program 8.2.2: Use of Nontraditional Instructors.

Program Statement

The aim of this program is to determine the advantages and disadvantages of nontraditional instructors, such as peers or older children, teaching reading.

Program Potential

An important part of classroom instruction in beginning reading is the availability of people trained to serve as instructors. Requirements as to the number and character of such people depend on the needs of the students and the goals of the school. Most first-grade classrooms today still depend on a single teacher who is responsible for all the needs of 25 to 35 children. A number of alternate arrangements have been proposed, but they have generally been tried out in haphazard ways--peer and cross-age tutors, paraprofessional aides, parent volunteers, and so on. While other NIE task forces are concerned with this problem, we feel that aspects unique to resource development in beginning reading warrant experimental research on this question.

Program Research Considerations

The development of human resources for instruction in beginning reading requires soliciting and selecting promising candidates, training them in requisite skills and knowledge, and monitoring of these adjunct instructors by a suitably trained supervisor. Experimental research on these components of human resource development could profitably focus on two general problems: (1) A determination of the characteristics of people and programs that seem most desirable in promoting successful reading instruction, and (2) a determination of the most effective methods and procedures that could be used in finding, or arranging for, such people and programs (see also Approach 8.3).

Project 8.2.2.1: Interactions Between Students and Tutors.

The aim of this project is to study and compare the interactions which occur between students and peer or cross-age tutors. A study of both the facilitative and nonfacilitative interactions typical of various kinds of tutoring arrangements may help us in choosing appropriate tutors for each student and in training these tutors for effective tutoring. A number of studies have attempted to identify those characteristics typical of effective tutors. So far, it seems that the tutorial relationship can be implemented successfully by people with a wide variety of backgrounds (Bloom, 1975; Calfee, 1975). Perhaps a more profitable approach would be to study tutor-student interactions using the approaches suggested under Program 8.2.1. We should give some attention to methods of training tutors to engage in the most effective teaching-learning interactions with their students.

Project 8.2.2.2: Effects of Use of Tutors on Reading Achievement and Learner Attitudes.

The goal of this project is to study the effects of peers and cross-age tutors on reading achievement and attitudes toward reading. Evidence that tutoring can be effective in improving both reading achievement and attitudes toward reading, combined with information on what makes for an effective program, may make tutoring a useful tool easily implemented by school administrators and teachers. Studies of the effects of tutoring tend to show that tutoring does raise the short term achievement level of the students in the subject taught. Few studies, however, have measured improvement in tutees' attitudes toward learning in a tutorial setting (Bloom, 1975; Calfee, 1975). Besides focusing on those conditions which foster academic achievement, research under this section should also investigate whether tutoring can be a means of improving attitudes about learning and abilities to learn when returned to the classroom situation.

APPROACH 8.3

INSTRUCTIONAL APPROACHES

Approach Statement

The goal of this approach is to study the effects of differences in instructional approaches and sequences of instructional experiences on learning to read.

Approach Potential

Successful completion of the research proposed in this approach will greatly increase our capacity to evaluate programs and parts of programs in terms of both process and final effectiveness.

Approach Rationale

This is a fairly ambitious approach. The programs within it tackle two of the major problems currently at issue in evaluation methodology: Analysis of the classroom processes and measurement of the outcomes. We need to develop evaluation methods that can be used easily by program planners, school administrators, and teachers. With the increasing interest in school accountability, accurate measures of program effects and implementation become important, as do effective techniques for diagnosing and correcting problems--problems both at the individual student level and at the level of programs and curriculums. Detailed discussions of research to date, its applicability and its shortcomings, are included in the appropriate program sections.

Division of the Approach

The approach has been divided into five programs. The first two develop the needed instruments and methods for the next two. Research under Program 8.3.1 develops a systematic method to describe the classroom process specifically in terms of reading instruction. Program 8.3.2 develops adequate instruments for assessing reading skill acquisition and methods for incorporating these instruments into a well designed program to measure program effectiveness. The next two programs will apply the products of 8.3.1 and 8.3.2 to evaluate beginning reading curriculums (8.3.3) and kindergarten and preschool programs (8.3.4). The fifth program focuses on one classroom variable which seems of special importance--time spent on actual instruction.

Program 8.3.1: Teaching-Learning Situation in the Acquisition of Reading.

Program Statement

The aim of this program is to investigate the nature of the processes of teaching and learning reading through refined and systematic descriptions of the processes as they occur in representative, naturalistic classroom settings.

Program Potential

Accurate description of processes so complex, so important to the entire schooling process, and so critical to an individual child's self-concept and future opportunity as the teaching and learning of reading merits study in its own right. However, such a description is also a means to another important end, i.e., it has the potential for yielding a set of factors which can subsequently be studied experimentally. Experimental studies of reading acquisition have suffered from the fact that we have not always manipulated or controlled critical variables in the teaching-learning process. The adequate description of the process as it exists will give us a clearer picture of what variables are likely to have the greatest payoff in experimental studies. In short, such a description is a necessary step in reaching the goal of establishing causal relationships between controllable factors in the teaching-learning situation and the improvement of children's reading.

Program Research Considerations

Systematic descriptions of the physical, social, and interactive environment in which teaching and learning occur are not new to educational research. Many systems (e.g., Flanders, 1970; Good and Brophy, 1973) presently exist for examining classroom interaction. Survey instruments for describing and evaluating the curricular and instructional components of teaching reading (e.g., Right to Read's program planning documents) also exist. Nor are such descriptions unique to the charge given to this particular panel. For example, both Panels 2 and 5 of the NIE Conference on Teaching address these concerns generally.

What does not exist--and indeed what is needed--is a system both comprehensive and specific for accurately describing the teaching-learning ecology of reading. It must be comprehensive in the sense that it is able to describe the various facets of teaching reading, e.g., teacher-learner interactions, curricular considerations, motivational factors and student performance. It must be specific in the sense that it is tied directly to the processes of teaching and learning reading. It may be that at least some of the present

generic systems will suffice, given modifications to tie them more specifically to reading. That, indeed, is a question for the research described in the subsequent projects to answer.

One methodological issue that the research needs to address centers on the time frame used to make and record observations. Some kinds of behavior can be adequately observed using time-sampling techniques. Such techniques may be appropriate particularly in a hypothesis-testing situation where the length and frequency of sampling can be derived directly from the theory which motivated the formulation of the hypothesis. It is likely, however, that there will be particular sources of information that can be gathered only in real time. Such a situation has been described in Approach 8.2 where descriptive data is collected as the raw material out of which hypotheses will be formed.

Also, the selection and/or development of all descriptive instruments must reflect the complexity of the teaching-learning situation in reading. This standard must be applied equally forcefully to instruments designed to measure student performance as it does to instruments yielding observations of the teaching-learning environment or to those devices which describe the nature of the curriculum materials.

Program 8.3.2: Developing Adequate Measures of Reading Skill Acquisition.

Program Statement

The aim of this program is to develop a set of measurements to assess children's acquisition of a variety of reading skills.

Program Potential

The state of the art of assessing reading skills leaves much to be desired. Two equally untenable alternatives exist. On the one hand, there are a host of standardized survey reading tests which have undergone careful scrutiny according to classical measurement criteria. Unfortunately, such tests are meant to be appropriate to the entire spectrum of reading curriculums and thus fail to be adequate for any single curriculum. On the other hand, there are a very large number of tests of discrete reading skills--tests that may be appropriate to single curriculums but that cannot be used to evaluate multiple approaches.

What is needed is a compromise between these extremes. We need well documented instruments to assess reading skill acquisition at a level of specificity sufficiently general to allow for program and individual evaluation and change among curriculums and yet sufficiently precise to allow teachers to actually interpret the data and implement changes within curriculums to the teaching-learning situation. No adequate research--be it descriptive or experimental--can be implemented until such tests are developed.

Program Research Considerations

Because of the fundamental importance of measurement to any research effort, we are presenting here an analysis of the requirements to be met by an adequate assessment system.

The most striking weakness in otherwise interesting studies of reading has been in the area of assessment. The usual procedure in most of the available research has been to specify a rather optimistic set of objectives in fairly general terms. The researcher then casts about for any instruments bearing some relationship to the objectives. If none exists, as is generally the case, a questionnaire or test is devised locally. More often, the practice has been to select a standardized instrument and administer it. Once data hav eben collected--the typical plan is a pre-post design--the researcher attempts to interpret the results in light of the program objectives.

There are several flaws in this approach which make impossible an objective assessment of the program: (1) Objectives have not been stated in a testable form, and (2) instrumentation has not been keyed to objectives; (3) an assessment system has not been planned in advance so there is no provision for obtaining coherent information; (4) the complexities of most programs suggest a need for the assessment of a variety of different outcomes. Yet typically only one criterion--achievement--has been used to assess a program which almost certainly has had impact in other domains as well. (5) Little thought has been given to the need for multiple measures of the same outcome in order to provide reliability; (6) measurements are taken typically only at the beginning and end of the program, providing no evidence about what is going on during the various stages of the process. Thus, significant gains, if any, cannot be attributed to any specific program component. (7) There are serious statistical and substantive problems in interpreting gain scores (Lord and Novick, 1968, pp. 73-76; also Cronback and Furby, 1970), which suggest the need to consider multiple measures over time, and the use of a multivariate approach to measurement. We are proposing that such practices be replaced by the thoughtful construction of an adequate assessment system. A systems approach to assessment presupposes the coordination of objectives and measures with the components of the reading program. Furthermore, thought must be given to relationships among objectives, and relationships among measures. Within the framework of an assessment system there are some general criteria to be considered:

- The instruments used to measure outcomes should be closely keyed to precisely stated, testable objectives. The appropriateness of the instruments should go beyond the "face validity" criterion that has been so often used.

- For any one objective, a number of measurements should be obtained so that several aspects of the behavior will be covered, allowing a "convergence" of data on a given construct. This technique leads naturally to a test of the validity of an instrumentation battery for the testing of an objective.

Program 8.3.3: Effects of Variations in Beginning Reading Curriculums.

Program Statement

The aim of this program is to conduct an evaluation of variations of a beginning reading curriculum in order to determine which variations optimize instructional outcomes.

Program Research Considerations

By way of example, suppose that the proposed curriculum is to be represented in modular form (as many reading curriculums actually are), i.e., within each lesson there are subsections dealing with specific tasks. Suppose that the evaluation will focus on three aspects: Content, materials and format, and management system. The curriculum is to be designed around a set of texts, the target population is first-grade, and the curriculum is supposed to meet the needs of a majority of teachers and students.

There are 16 2-week segments in the curriculum, and the curriculum developer thinks it feasible to create as many as 20 variations on the basic curriculum program, and to carry out the experiment in as many as 50 classrooms. The purpose of the experiment is to provide information about the merits of the 20 variations.

Preliminary discussions have identified the following questions:

(I) Content decision--basic reading instruction--

(a) What is the value of a relatively strong emphasis on phonics-decoding skills, as contrasted to a relatively strong emphasis on comprehension-"reading for meaning?" The planners' intention is to incorporate both components in the curriculum, but they would like some information on the degree to which teachers make use of the two types of materials, and the amount of learning and student acceptance of these two types of materials at different times in the school year.

(b) Within the two levels of the preceding question, two subquestions are nested:

(1) Is phonics most effectively presented by a rule orientation based on learning letter-sound associations and blending procedures, or by a word-based orientation (see Bloomfield and Barnhart, 1961)?

(2) How important is vocabulary control? Is reading for meaning better taught with high-frequency words likely to be irregularly spelled versus less frequent words regularly spelled?

(II) Content--skill development--

(a) Does it make a difference whether or not visual skills work sheets and other similar materials are included in a module?

(b) Do auditory-skill materials make a difference?

(III) Content--literature--

(a) Does it matter whether or not materials for storytelling and poetry are included in a module?

(b) Do materials for creative dramatics and writing make a difference?

(IV) Materials-format--

(a) Does it make a difference whether or not student workbooks are included with the basic textbook materials?

(b) Do records, audio tapes and films make a difference?

(c) Do supplementary materials especially designed for very fast and/or very slow learners make a difference?

(V) Management--

(a) Does it matter whether a module is constructed around a learning-to-mastery emphasis, as opposed to a minimal competence or remedial model?

(b) Does it matter whether or not an assessment system is provided?

(c) Does it matter whether or not a recordkeeping system is provided?

The questions in "I" are of fundamental importance to the construction and refinement of curricular content in the final version of the program. The questions in "II" through "V" are all yes-no questions. These relate to the tendency to throw everything into current curriculums, resulting in a "smorgasbord" approach. This approach costs money, makes it more difficult for a teacher to identify useful components, and is of uncertain benefit. The answers to "II" through "IV" will provide evidence about which auxiliary components are valuable additions to the basic curriculum.

It was assumed earlier that a set of 20 or so variations were to be installed in about 50 classrooms. Each classroom will have students who vary in entering ability level, sex, and other pertinent factors. It would make sense to use such student information in the analysis. These data would permit an especially strong attack on what has been referred to as the aptitude-treatment interaction hypothesis (Cronbach and Snow, 1969). This is the idea that children should be taught in different ways depending on preexisting and stable characteristics. Although the notion makes sense, a recent review of the research evidence on this question by Cronbach and Snow (in press) suggests that the research to date has been poorly conceived and badly done.

An even more interesting possibility presents itself. Suppose we wanted to find out how the effect of a curriculum decision depends on preexisting characteristics of the school and teacher. We would need to plan a between-class design that provides control over relevant factors that differentiate schools and teachers. For example,

A. School Characteristics

(1) Urban or suburban

(2) High or low socioeconomic neighborhood

(3) Self-contained or open space plan

B. Teacher Characteristics

(1) Experienced or beginning

(2) Prefers to follow curriculum and teacher manual closely or prefers to adapt curriculum to own program

(3) Prefers large-group instruction or prefers small-group, independent work.

Calfee (1974) has shown in detail how this particular set of variables might be studied by a fractional design, providing comprehensive control in an efficient plan at reasonable cost. The major point is that it is feasible to plan research designs that both handle the complexities that arise in curriculum planning and development, and achieve the rigor of control deemed necessary in behavioral experiments.

The experiment described above constitutes a broad framework within which another level of experimental questions could be planned. For instance, within a phonics module one could raise questions about (1) the order in which specific letter-sound correspondences are presented, (2) the rate at which new correspondences are introduced, or (3) the maintenance of constancy or variability in vowel patterns (e.g., are short vowel patterns presented first, followed by long vowels, or are both long and short vowels presented and contrasted in a single session?).

By building successively more detailed designs, the experimenter can create a hierarchy of experiments, within which might be embedded experiments as precise as those now conducted in experimental psychology laboratories. In the larger context of the entire study, such studies might achieve a degree of relevance and generalizability they now lack.

Program 8.3.4: Effects of Preschool Programs on Early Reading.

Program Statement

The aim of this program is to study the effects of variation in kindergarten and preschool programs on acquisition of reading and language arts in the early grades.

Program Potential

We can identify at the age of 4 or 5 those individual children likely to read poorly in grade 3--given instruction in classrooms as presently constituted. Most children in this country attend a year of kindergarten; many attend a preschool or nursery school prior to that. The instructional programs at this level vary widely, but there is no general effort to teach reading as such, and language arts programs are haphazard. The question of how to use this time in a child's life best to realize certain instructional and social goals has political and cultural ramifications--many educators and many parents believe that this period in a child's life should remain relatively carefree. Others feel that it is the best time to compensate for those background differences which will have a later effect in school. This program will investigate this question.

Program Research Considerations

Efforts to compensate for differences between children in entry levels have not met with consistent success. However, the evidence on this issue is far from trustworthy. Virtually all of the data in this area are based on a compensatory model; the instructional programs have had questionable relevance to school achievement. (How many Head Start programs were based on an analysis of what skills a first grader needs in learning to read?) The degree of control over program variation and the adequacy of the assessment system have been marginal.

We think that preprimary school experiences might be used to considerable advantage to increase the chances that every child become a fluent reader, and hence propose a series of experimental studies of this function. The variables of chief interest concern the content and emphasis on language arts and early reading. We are not proposing a comparison between whether reading is taught in kindergarten or not; that would be a crude and uninformative approach to a complex question.

Project 8.3.4.1: Components of Preschool Reading Programs.

What is the effect of emphasizing different language arts and reading curriculum components? Kindergartners spend a lot of time on "visual-perceptual" tasks. But suppose they were entirely eliminated. Auditory-phonetic skill development, vocabulary development, training in concepts (color and form are popular in many current curriculums), problem-solving and attentional skills are all reasonable candidates for inclusion in a kindergarten program. It is impossible to cover every component in great depth. What components are most important, and to what extent do these have to be based on the characteristics of an individual student?

This project might also consider the following questions:

- What is the feasibility and effectiveness of including basic reading skills in the kindergarten program?
- What kinds of inclass assessment methods are useful adjuncts to a kindergarten program for instructional decisions about individual children?
- What procedures are used to facilitate home to school transition and K-1 transition?
- What programs are available for involving parents to children's kindergarten experience, and for promoting parent participation in early reading activities?

These questions parallel the decisions that have to be made in setting up kindergarten programs in public schools. They have been studied very little in any context; the existing research is generally descriptive, demonstrational, nonexperimental, poorly controlled, and inadequate. The questions presented above have been examined in isolation, ignoring the possibility that low-order interactions might be quite important--for instance, the extent to which a decision about the emphasis on reading in kindergarten may depend on how the kindergarten to first grade transition is handled. It is for this reason that we think that comprehensive experiments are required, to control a wide range of classes of variables.

Program 8.3.5: Role of Time in the Acquisition of Basic Reading Skills.

Program Statement

Study the role played by time--time devoted to reading instruction, time appropriately or inappropriately spent--on the acquisition of basic reading skills.

Program Potential

Of all the classroom variables which might possibly affect children's achievement, the time they spend on a learning task may be one of the more important and manipulable ones. Intuitively, at least, children's proficiency in a given area should somehow be related to the amount of time they actually spend learning and practicing skills in this area. With the development of more sophisticated classroom observation techniques, it becomes possible now to explore time as a classroom variable and to develop interventions which encourage a more effective use of children's classroom time.

Program Research Considerations

Research under this program will make use of the classroom observational techniques developed under Program 8.3.1 and Approach 8.2. In addition, the work that has been carried out by Carroll and Cooley and others (Cooley and Emrick, 1974; Cooley and Lohnes, in prep.) on Carroll's Model of Learning (1963) and the work being conducted through Robert O'Reilley for the New York State Department of Education should be considered here (Kidder and Schuder, 1975). The following suggested projects focus not only on measuring total time spent on instruction, but also on refining these totals to reflect the amount of time children actually use effectively and appropriately.

Project 8.3.5.1: Instruction Time.

This project will survey the amount of time spent by teachers in actual instructional interaction with children in the area of reading. This would be very useful baseline data for a series of followup studies which systematically vary the amount of instructional time. As part of the survey, reading activities (other than direct instructional interaction) should also be included--specifically individual child time and time spent on reading activities with peers. Instructional interaction time should also be divided among large and small group time and individual child-teacher and child-tutor interactions. Children should be the focus of the observation, with random samples of children from classrooms. It might also be useful to consider subsets of the study which control for curriculum. For baseline purposes our interests are in the actual amount of time spent in average classrooms and in the variation in time spent.

Project 8.3.5.2: Children's Engagement Time.

The previous project will produce baseline data on the amount of time actually spent on instruction on reading, i.e., opportunity time. This study will consider the related variable of children's actual engagement during this instruction time. The idea here is that children (for lots of reasons) will not utilize all of the instruction time the teacher offers--they might waste some. Observational techniques matching engagement time to opportunity time by classroom could be used to arrive at some data-based notion of instructional inefficiency.

Project 8.3.5.3: Appropriate Use of Time.

Refining the results of the above studies, this project will consider the problem of appropriate use of time by individual children. Techniques for diagnosing the needs of individual children and determining what percentage of engagement time is appropriately spent are needed. Are some children spending too much time on tasks they have already learned? Are other children not given enough time (either in one large block or in many spaced chunks)? Again, this will produce baseline information, but from the point of view of policy--particularly for compensatory interventions--this information is of critical importance. Among other things, the results may justify research on and development of ways to intervene to increase or make more efficient appropriate engagement time.

Project 8.3.5.4: Time Related to Achievement.

Using the results of the above studies, the various time on task and opportunity variables can be related to measures of achievement. Cooley and Lohnes (in prep.) for example, have found some interesting results working with Individually Prescribed Instruction programs relating time to criterion-referenced outcomes.

Project 8.3.5.5: Increasing Engagement Time.

The next step in the overall process of exploring time is to design simple experimental interventions to increase engagement time. One such intervention might simply make teachers aware of the amount of time students spend on a task, appropriately and inappropriately, and have them introspect about the reasons for the little time students actually spend appropriately (assuming the amount is small). This device might motivate the teacher to try some other activities to increase student engagement.

APPROACH 8.4

RELATIONSHIP OF READING SKILLS TO OTHER LANGUAGE COMMUNICATION SKILLS

Approach Statement

The goal of this approach is to study the relationship between learning to read and learning related language communication skills.

Approach Potential

Children's general language abilities are constantly developing during the school years and interacting with their developing reading abilities. An understanding of these developments and interactions should help in designing effective instructional methods and texts for early reading.

Approach Rationale

Recent research has indicated that children's knowledge of language is by no means complete by the time they begin school. While they are learning to read, their language abilities are constantly expanding, due to natural maturation, new experiences, and possibly due to the reading instruction itself. It is important, then, to view reading instruction within this larger context. It should both take advantage of the broader language knowledge of the child and work effectively to expand this knowledge.

Approach Division

We could suggest a number of broad programs exploring the development of linguistic, conceptual, and experiential knowledge in children. Instead, we choose to focus on four programs which seem to have direct relevance to reading instruction in the classroom. The first program investigates children's understanding of syntax; certainly textbook writers should be aware of the kinds of sentences children can and cannot understand at various ages. The second program focuses on children's listening skills as possible indicators of potential reading skills. The third considers the extent to which encouraging children to write will aid in the development of reading skills. The fourth considers the role of television in expanding children's language abilities and specifically in teaching reading.

Program 8.4.1: Children's Knowledge of Syntax.

Program Statement

The goal of this program is to characterize the development of syntactic knowledge in schoolage children.

Program Potential

Evidence is mounting that syntactic development as evidenced in oral language does not reach an asymptote at age 4 or 5. This conclusion was widely held through the 1960s, and adherence to it effectively ruled out certain kinds of studies or emphases in reading programs. If, for example, all children are assumed to have mastered almost all of the grammatical structures of their language by the time they start school, there is little rationale for seeing how spoken language affects reading or, in particular, how knowledge of grammar affects reading because all children should be approximately the same in this regard. Yet, if this assumption is incorrect and skills connected with syntactic features of language are still being developed and refined over the early school years, two consequences follow: (1) Different children may be at different stages of development, and (2) syntactic skills of various kinds could be the aim of some instructional programs, or at least the level of syntactic development could be taken into account in developing reading texts.

Program Research Considerations

Two studies (Frasure and Entwisle, 1973; Entwisle and Frasure, 1974) expanding on an earlier idea of David McNeill's (1970) point to significant and sizable improvements in children's ability to employ syntactic information in processing verbal materials. Using very simple sentences of two kinds, Frasure and Entwisle showed that syntactic information was the basis for an improving performance in sentence recall during ages 5 to 8, and that this improvement was particularly noticeable for children from families of low socioeconomic status. Middle class children showed improvement early in the 5 to 8 time span, around kindergarten and first grade, while the low SES children were manifesting marked improvement later, between first and third grades. Other recent studies that point to continuing development in syntactic competence over the early school years are those of Carol Chomsky (1969) using complements of "ask" and "promise," and two experiments by Caramazza (1974). Caramazza shows that there are two stages in the development of skill in processing center-embedded sentences, one at about age 3 based on acquisition of semantic knowledge and another later, around ages 5 to 6 based on syntactic knowledge. Further work (DeVos, Payne, and DePriest, unpublished) suggests that even 8 year-olds have not reached adult competence levels in processing particular kinds of center-embedded sentences. Although the research here is promising, the results are as yet too piecemeal to be useful in designing reading curriculums.

Program 8.4.2: Listening Skills and Reading.

Program Statement

The aim of this program is to explore the relationship between listening skills and reading skills in the early years.

Program Potential

There are many differences between listening skills and reading skills which may cloud their relationship, especially in the later years, when the focus at school is on reading comprehension. However, in early reading it seems that their relationship may be much more direct. Children are asked to read very short sentences they could easily hold in short term memory and comprehend if spoken. In later years, children may learn new vocabulary and syntactic constructions from reading; in fact this may be the primary way language knowledge is expanded. In the early years, however, before children achieve a certain speed and facility with the written word, listening may be the primary means of expanding language knowledge. At this stage, children should not be expected to understand written words and sentences which they cannot understand when spoken. Sticht and others (1974) suggest that early listening ability is the limit which early reading ability will reach once the child has mastered decoding; therefore, it can be used to predict reading ability. This program will explore the ways in which this expanding knowledge of oral language transfers to reading skills. It will also consider when, if ever, reading skills begin to surpass listening skills.

Program Research Considerations

In studying the relationship between listening and reading skills, it is important to remember the differences between spoken and written messages at the early reading level (Sticht, et al., 1974). Unlike a spoken message, a written message can be reread by the reader several times until it is comprehended. Readers can sometimes use spelling to disambiguate words (night vs. knight); listeners, on the other hand can use accents (proj'-ect versus pro-ject') and pronunciation (rēad versus read). Additionally readers may use peripheral vision to help predict what is coming (see Panel 4 for more on peripheral vision). Research designs in this program should take into account these kinds of differences.

Program 8.4.3: Early Writing Skills.

Program Statement

The aim of this program is to investigate the use of writing as a means of improving children's reading abilities.

Program Potential

Just as children learn to speak as they learn to understand spoken language, it may be useful for children to learn to write as they learn to read. Current research suggests that it is important for readers to take an active attitude toward what they are reading. Allowing children to write, to compose their own texts, may encourage this active attitude toward reading.

Program Research Considerations

An early reading curriculum that incorporates writing might be very effective in teaching reading. Such a curriculum might begin with the teacher taping children's spoken sentences and then writing them down and letting the children read them. The next step would be to encourage the children themselves to actually write down their own thoughts and stories, or to send messages to each other and to the teacher. Such activities might serve several useful purposes: They might impress upon children the fact that words on a page represent the spoken language already familiar to them. They may also suggest to children the purpose of written language--another way of communicating thoughts. They should convince children that writing flows best out of active thinking processes (for example, in thinking through a story and deciding how to end it), an attitude which may be extended to an active involvement in reading. Finally, use of texts written by classmates may be one way to motivate children to learn to read.

Although there are a number of popular accounts of teaching reading by methods such as the foregoing, research on early use of writing in teaching reading does not seem to be extensive. There is some evidence (Charles Read, University of Wisconsin) that children aged 5 and 6 can compose words and messages in their own invented spellings before they are able to read. If such is the case, then the tendency to postpone creative writing until later grades may be misguided. The question of spelling may be worth investigating in a separate project simply because of the attention given to it in the early grades.

Project 8.4.3.1: Use of Writing in Early Reading Curriculums.

The goal of this project is to determine the effects of using writing as an integral part of the early reading curriculum, and to determine under what conditions the use of writing is most effective.

Project 8.4.3.2: Focus on Spelling.

The aim of this project is to investigate the effects of teaching spelling and correcting spelling errors in the writing of early readers.

Intuitively, at least, it seems that a constant focus on correct spelling could be a deterrent to the free written expression of children's thoughts. Such a focus could distract children while they are writing, limit what they are able to say, and thus undermine the usefulness of the writing activity. On the other hand, children might tend to misread in textbooks those words which they normally misspell and therefore develop more reading problems the more they write. Although this discussion may present two unnecessarily extreme alternatives, some clarification of this issue seems needed.

Program 8.4.4: Use of Media.

Program Statement

The goal of this program is to investigate the use and effectiveness of television and other media in the teaching of reading.

Program Potential

Children today spend an enormous amount of time watching television. During this time they are constantly absorbing and processing information and learning, just as they learn from the rest of their environment. In fact television may be effective enough to insure that children of various cultural backgrounds do bring to school at least some common vocabulary and conceptual bases. Yet despite the obvious instructional potential of television, very few programs exist which consciously attempt to teach reading skills. Two national programs which do exist, Sesame Street and the Electric Company, focus on two well-defined groups: preschool children and second graders who are problem readers. Although these programs seem to be effective in teaching and in reaching an extremely wide audience, it seems to us that the medium is generally being underutilized. Clearly there are other groups of children, and adults as well (such as adult illiterates), who might benefit from similar well conceptualized and imaginatively designed programs.

Program Research Considerations

Data from studies of the effects of Sesame Street and the Electric Company suggest that television can be effective in teaching children certain early reading skills--letter names, blending, vocabulary, left-to-right ordering of letters in words, and so on. Research on eye movements of the television viewer is just beginning to indicate how various visual techniques affect the attention and information processing of the viewer. Suggested here are projects to continue this research and to develop the television medium in areas in which it is currently not being exploited.

Project 8.4.4.1: Attentional Factors in Television Viewing.

The aim of this project is to determine those techniques of television programing which successfully draw the attention of viewers of different ages and backgrounds. Because short, quick advertisements seem to capture and keep children's attention, Sesame Street has organized its program structure around short bits of advertisement length. Certain camera techniques--zooming in on a face, cutting quickly to another scene, superimposing animation--may also be effective ways of focusing attention on relevant information.

Project 8.4.4.2: Use of Television for Teaching Comprehension.

The goal of this project is to investigate the possibility of using television for teaching reading comprehension involving single sentences or longer texts. Currently, programs like Sesame Street and the Electric Company focus on teaching early reading skills. Indeed, they are known for the clever techniques they use to make these skills interesting and fun to learn. We feel that such ingenuity in programing could be applied to more advanced reading comprehension skills.

Project 8.4.4.3: Develop New Educational Programs for Television.

Based on the research completed under Projects 8.2.2.1 and 8.2.2.2, this project will develop new educational television programs targeted at audiences not currently addressed by existing programs.

Project 8.4.4.4: Interactive Television in the Classroom.

It may at some point become possible to create a television system with which children could interact individually. The very possibility seems highly attractive and worth investigating. Such a system might effectively focus children's attention on a problem, react to their specific ways of dealing with it, and carry out a lesson at the children's own paces.

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